Claims

[c1]   A pixel classification method, comprising:

    determining a background intensity level of an image, the background intensity level being based on substantially all of the pixels of the image;

    classifying a pixel of the image; and

    checking the classification of the pixel based on the determined background intensity level of the image.

[c2]   The pixel classification method of claim 1, wherein the determining step comprises determining a white point of the image based on at least one characteristic of substantially all of the pixels of the image.

[c3]   The pixel classification method of claim 2, wherein the checking step comprises comparing an intensity of the pixel with an intensity of the white point of the image.

[c4]   The pixel classification method of claim 3, further comprising reclassifying the pixel as background when the pixel is classified as a class eligible to be reclassified and the intensity of the pixel is not less than the intensity of the white point of the image.

[c5]   The pixel classification method of claim 3, further comprising reclassifying the pixel as one of smooth contone and an equivalent class when the pixel is classified as background and the intensity of the pixel is less than the intensity of the white point of the image.

[c6]   The pixel classification method of claim 1, wherein the determining step comprises identifies a spread of intensity levels of substantially all the pixels of the image and determining an intensity level of a majority of the pixels.

[c7]   The pixel classification method of claim 4, wherein the pixel is classified as smooth contone.

[c8]   A pixel classification apparatus, comprising:
         a background intensity level determining module that determines a background intensity level of an image based on substantially all of the pixels of the image; and
         an image processing module that classifies a pixel of the image, and checks the classification of the pixel based on the determined background intensity level of the image.

[c9]   The pixel classification apparatus of claim 8, wherein the background intensity level determining module determines a white point of the image based on a characteris-

tic of substantially all of the pixels of the image.

[c10] The pixel classification apparatus of claim 9, wherein the image processing module checks the classification of the pixel by comparing the intensity of the pixel with the intensity of the white point of the image.

[c11] The pixel classification apparatus of claim 10, wherein when a pixel is classified as a class eligible to be reclassified and the intensity of the pixel is not less than the intensity of the white point of the image, the pixel is reclassified as background.

[c12] The pixel classification apparatus of claim 10, wherein when a pixel is classified as background and the intensity of the pixel is less than the intensity of the white point of the image, the pixel is reclassified as smooth contone.

[c13] The pixel classification apparatus of claim 1, wherein the image processing module identifies a spread of intensity levels of substantially all the pixels of the image and determines an intensity level of a majority of the pixels.

[c14] The pixel classification apparatus of claim 11, wherein the pixel is classified as one of smooth contone and an equivalent class.

[c15]   An image processing method, comprising:

   determining a background intensity level of an image, the background level being based on substantially all of the pixels of the image;

   classifying a pixel of the image;

   checking the classification of at least a portion of the pixels of the image based on the determined background intensity level of the image;

   reclassifying pixels based on results of the checking step; and

   processing image data of the pixels of the image based on the classification of the pixels.

[c16]   The image processing method of claim 15, further comprising storing a label associated with each of substantially all of the pixels, wherein the label of each of substantially all of the pixels is based on results of the classification step and the checking step for the pixel.

[c17]   The image processing method of claim 15, wherein classifying a pixel of the image comprises classifying the pixel as one of smooth contone, rough contone, text, background, graphics and halftone.

[c18]   The image processing method of claim 15, wherein the determining step comprises determining a white point of the image based on a characteristic of substantially all of

the pixels of the image.

[c19]   The image processing method of claim 18, wherein the checking step comprises comparing an intensity of the pixel with an intensity of the white point of the image.

[c20]   The image processing method of claim 19, wherein when the pixel is classified as smooth contone and the intensity of the pixel is not less than the intensity of the white point of the image, the pixel is reclassified as background.

[c21]   The image processing method of claim 19, wherein when the pixel is classified as background and the intensity of the pixel is less than the intensity of the white point of the image, the pixel is reclassified as smooth contone.

[c22]   The image processing method of claim 15, wherein the portion of the pixels comprises substantially all of the pixels of the image.